

### **Amendments to the Claims:**

This listing of claims will replace all prior versions and listings of claims in the application.

### **Listing of Claims:**

1. (ORIGINAL) Use of an acetylcholine esterase antagonist in the manufacture of a medicament useful in reducing insulin resistance in a mammalian patient suffering therefrom.
2. (ORIGINAL) Use of an acetylcholine esterase antagonist in reducing insulin resistance in a mammalian patient suffering therefrom.
3. (CURRENTLY AMENDED) Use of ~~any one of claims~~ claim 1 or 2 wherein the insulin resistance is at least partially the result of inadequate levels of acetylcholine in the patient's hepatic parasympathetic nerve synapses.
4. (ORIGINAL) Use of an acetylcholine esterase antagonist in the manufacture of a medicament useful to increase skeletal muscle glucose uptake in a mammalian patient.
5. (ORIGINAL) Use of an acetylcholine esterase antagonist to increase skeletal muscle glucose uptake in a mammalian patient.
6. (CURRENTLY AMENDED) Use of claim 1, ~~2, 4 or 5~~ wherein the patient suffers from suboptimal hepatic regulation of blood glucose levels.
7. (CURRENTLY AMENDED) Use of claim 1, ~~2, 3, 4, 5 or 6~~ wherein the acetylcholine esterase antagonist is at least one of donepezil, galanthamine, rivastigmine, tacrine, physostigmine, neostigmine, edrophonium, pyridostigmine, demecarium, pyridostigmine, phospholine, metrifonate, zanapezil, and ambenonium.
8. (CURRENTLY AMENDED) Use of ~~any preceding~~ claim 1 wherein the patient is a human.

9. (ORIGINAL) A pharmaceutical composition comprising a suitable acetylcholine esterase antagonist and at least one other drug used in the treatment of diabetes.

10. (ORIGINAL) The composition of claim 9 further including a pharmaceutically acceptable liver-targeting substance.

11. (CURRENTLY AMENDED) The composition of claim 9 ~~or 10~~ wherein the antagonist is at least one of donepezil, galanthamine, rivastigmine, tacrine, physostigmine, neostigmine, edrophonium, pyridostigmine, demecarium, pyridostigmine, phospholine, metrifonate, zanapezil, and ambenonium.

12. (CURRENTLY AMENDED) The composition of claim 9, ~~10 or 11~~ wherein the other drug is at least one of insulin, insulin analogues, sulfonylurea agents, tolbutamide, acetohexamide, tolazamide, chlorpropamide, glyburide, glipizide, glimepiride, biguanide agents, metformin, alpha-glucosidase inhibitors, acarbose, miglitol, thiazolidinedione agents (insulin sensitizers), rosiglitazone, pioglitazone, troglitazone, meglitinide agents, repaglinide, phosphodiesterase inhibitors, anagrelide, tadalafil, dipyridamole, dyphylline, vardenafil, cilostazol, milrinone, theophylline, sildenafil, caffeine, cholinergic agonists, acetylcholine, methacholine, bethanechol, carbachol, pilocarpine hydrochloride, nitric oxide donors, products or processes to increase NO synthesis in the liver, SIN-1, molsidamine, nitrosylated N-acetylcysteine, nitrosylated cysteine esters, nitrosylated L-2-oxothiazolidine-4-carboxylate (OTC), nitrosylated gamma glutamylcystein and its ethyl ester, nitrosylated glutathione ethyl ester, nitrosylated glutathione isopropyl ester, nitrosylated lipoic acid, nitrosylated cysteine, nitrosylated cystine, nitrosylated methionine, S-adenosylmethionine, products or processes to reduce the rate of NO degradation in the liver, products or processes to provide exogenous NO or an exogenous carrier or precursor which is taken up and releases NO in the liver, antioxidants, vitamin E, vitamin C, 3-morpholinomethionine, glutathione increasing compounds, N-acetylcysteine, cysteine esters, L-2-oxothiazolidine-4-carboxylate (OTC), gamma glutamylcystein and its ethyl ester, glutathione ethyl ester, glutathione isopropyl ester, lipoic acid, cysteine, cystine, methionine, and S-adenosylmethionine.

13. (CURRENTLY AMENDED) The composition of claim 10, ~~11 or 12~~ wherein the liver-targeting substance is at least one of albumin, bile salts and liposomes.
14. (ORIGINAL) A kit comprising:  
an acetylcholine esterase antagonist in a pharmaceutically acceptable carrier; and  
instructions for the administration of the acetylcholine esterase antagonist to  
reduce insulin resistance in a mammalian patient.
15. (ORIGINAL) The kit of claim 14 further comprising means to administer the  
acetylcholine esterase antagonist.
16. (ORIGINAL) A method of reducing insulin resistance in a mammalian patient  
comprising administering a suitable acetylcholine esterase antagonist.
17. (ORIGINAL) A method of amplifying the effect of the hepatic parasympathetic  
reflex on skeletal muscle insulin sensitivity comprising administering an acetylcholine esterase  
antagonist.
18. (ORIGINAL) A method of increasing glucose uptake by skeletal muscle of a  
patient suffering from suboptimal hepatic regulation of blood glucose levels, comprising  
identifying the patient as suffering from suboptimal hepatic regulation of blood glucose levels  
and administering a suitable acetylcholine esterase antagonist.
19. (ORIGINAL) A method of reducing insulin resistance in a mammalian patient  
suffering from inadequate levels of acetylcholine in the hepatic parasympathetic nerve synapses,  
said method comprising identifying the patient as suffering from inadequate levels of  
acetylcholine in the hepatic parasympathetic nerve synapses and administering a suitable  
acetylcholine esterase antagonist.

20. (CURRENTLY AMENDED) The method of ~~any preceding~~ claim 1 wherein the acetylcholine esterase antagonist is at least one of donepezil, galanthamine, rivastigmine, tacrine, physostigmine, neostigmine, edrophonium, pyridostigmine, demecarium, pyridostigmine, phospholine, metrifonate, zanapezil, and ambenonium.
21. (CURRENTLY AMENDED) The method of ~~any preceding~~ claim 1 wherein the acetylcholine esterase antagonist is targeted to the liver.
22. (ORIGINAL) The method of claim 21 wherein the acetylcholine esterase is targeted to the liver using albumin.
23. (ORIGINAL) The method of claim 21 wherein the acetylcholine esterase is targeted to the liver using a plurality of liposomes.
24. (ORIGINAL) The method of claim 21 wherein the acetylcholine esterase is targeted to the liver using bile salts.
25. (CURRENTLY AMENDED) The method of ~~any preceding~~ claim 1 wherein the acetylcholine esterase is administered by intravenous administration.
26. (CURRENTLY AMENDED) The method of ~~any preceding~~ claim 1 wherein the acetylcholine esterase is administered by transdermal administration.
27. (CURRENTLY AMENDED) The method of ~~any preceding~~ claim 1 wherein the acetylcholine esterase is administered by oral administration.
28. (CURRENTLY AMENDED) The method of ~~any preceding~~ claim 1 wherein the acetylcholine esterase is administered by intra peritoneal administration.
29. (CURRENTLY AMENDED) The method of ~~any preceding~~ claim 1 wherein the acetylcholine esterase antagonist is administered by portal vein injection.

30. (CURRENTLY AMENDED) The method of ~~any preceding~~ claim 1 wherein the acetylcholine esterase antagonist is administered by immobilization of the acetylcholine esterase antagonist on a solid support and implantation of the support adjacent the patient's liver.
31. (CURRENTLY AMENDED) The method of ~~any preceding~~ claim 1 wherein the patient suffers from at least one of chronic liver disease, chronic hypertension, type II diabetes, fetal alcohol syndrome, gestational diabetes, age-related insulin resistance, and hepatic nerve damage.
32. (CURRENTLY AMENDED) The method of ~~any preceding~~ claim 1 wherein the patient is a human.
33. (CURRENTLY AMENDED) Use of claim 1, ~~2 or 3~~ wherein the insulin resistance is hepatic insulin sensitizing substance-dependent insulin resistance.
34. (CURRENTLY AMENDED) The method of ~~any preceding~~ claim 1 wherein the insulin resistance is hepatic insulin sensitizing substance-dependent insulin resistance.
35. (NEW) Use of claim 2 wherein the insulin resistance is at least partially the result of inadequate levels of acetylcholine in the patient's hepatic parasympathetic nerve synapses.
36. (NEW) Use of claim 2 wherein the patient suffers from suboptimal hepatic regulation of blood glucose levels.
37. (NEW) Use of claim 4 wherein the patient suffers from suboptimal hepatic regulation of blood glucose levels.
38. (NEW) Use of claim 5 wherein the patient suffers from suboptimal hepatic regulation of blood glucose levels.

39. (NEW) Use of claim 2 wherein the acetylcholine esterase antagonist is at least one of donepezil, galanthamine, rivastigme, tacrine, physostigime, neostigmine, edrophonium, pyridostigmine, demecarium, pyridostigmine, phospholine, metrifonate, zanapezil, and ambenonium.
40. (NEW) Use of claim 4 wherein the acetylcholine esterase antagonist is at least one of donepezil, galanthamine, rivastigme, tacrine, physostigime, neostigmine, edrophonium, pyridostigmine, demecarium, pyridostigmine, phospholine, metrifonate, zanapezil, and ambenonium.
41. (NEW) Use of claim 5 wherein the acetylcholine esterase antagonist is at least one of donepezil, galanthamine, rivastigme, tacrine, physostigime, neostigmine, edrophonium, pyridostigmine, demecarium, pyridostigmine, phospholine, metrifonate, zanapezil, and ambenonium.
42. (NEW) Use of claim 1, 2 or 3 wherein the insulin resistance is hepatic insulin sensitizing substance-dependent insulin resistance.